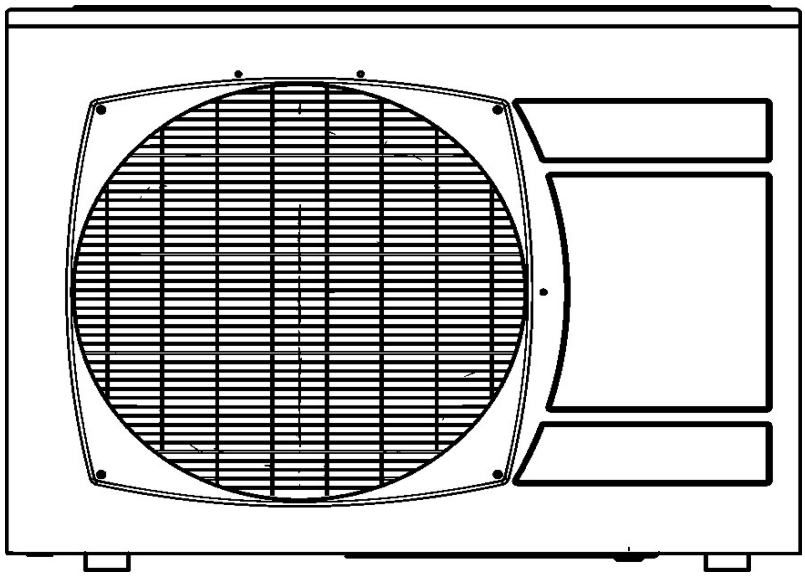
TECHNICAL DATA
& SERVICE MANUAL

OUTDOOR UNIT: GRF225C5/L5
GRF225R5
GRF225C7/L7
GRF225R7

SPLIT SYSTEM AIR CONDITIONER

Model No.	Product Code No.
GRF225C5	GRF225C5TAA
GRF225C7	GRF225C7TAA
GRF225R5	GRF225R5TAA
GRF225R7	GRF225R7TAA
GRF225L5	GRF225L5TAA
GRF225L7	GRF225L7TAA



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IMPORTANT!
Please read before installation

This air conditioning system meets strict safety and operating standards.
For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

For safe installation and trouble-free operation, you must:
- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

•The unit must be supplied with a dedicated electrical line.

WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If necessary, get help
These instructions are all you need for most installation sites and maintenance conditions.
If you require help for a special problem, contact our sale/service outlet or your certified dealer for additional instructions.

In case of improper installation
The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

- During installation, connect before the refrigerant system and then the wiring one; proceed in the reverse orden when removing the units.

WARNING **When wiring**

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIANS SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring.
  Improper connections and inadequate grounding can cause **accidental injury and death**.
- **Ground the unit** following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- Do not use multi-core cable when wiring the power supply and control lines. Use separate cables for each type of line.

When transporting
Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminium fins on the air conditioner can cut your fingers.

When installing...
... In a ceiling or wall
Make sure the ceiling/wall is strong enough to hold the unit-weight. It may be necessary to build a strong wooden or metal frame to provide added support.

... In a room
Properly insulate any tubing run inside a room to prevent "sweating", which can cause dripping and water damage to walls and floors.

... In moist or uneven locations
Use a raised concrete base to provide a solid level foundation for the outdoor unit.
This prevents damage and abnormal vibrations.

... In area with strong winds
Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

... In a snowy area (for heat pump-type systems)
Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When connecting refrigerant tubing
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:
Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion, the refrigerant tubing for your particular model is specified as narrow tube for liquid, wide tube for gas.

When servicing
- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testng the refrigeration system; make sure that, after the installation, no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

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1. OPERATING RANGE

	Temperature	Indoor Air Intake Temp.	Outdoor Air Intake Temp.
Cooling	Maximum	32°C D.B. / 23°C W.B.	46°C D.B.
	Minimum	21°C D.B. / 15°C W.B.	10°C D.B. / -10°C D.B.(*)
Heating	Maximum	27°C D.B.	24°C D.B. / 18°C W.B.
	Minimum	-	-9°C D.B. / -10°C W.B.

(*) Only for models:
GRF225L5
GRF225L7

2. SPECIFICATIONS

2-1 Unit Specifications

GRF225C5/L5

Power source	220 - 240V ~ 50Hz

Voltage rating	230V

Performance *	**MCAF225R5**		Cooling	Heating
	Capacity	kW	6,81	-
		BTU/h	23220	-
	Air circulation (High)	m^3/h	990	
	Moisture removal (High)	Liters/h	2,66	-

Electrical Rating		Cooling	Heating
Available voltage range	V	198 ~ 264	
Running amperes	A	9,4	-
Power input	W	2260	-
C.O.P.	W/W	3,01	-
Compressor locked rotor amperes	A	65	-

Features			
Fan speed			1(Hi)
Compressor			Rotary (Hermetic)
Refrigerant / Amount charged at shipment		g	R410A / 2040
Refrigerant control			Capillary tube
Power sound level	Hi	dB-A	67
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment		m	20
Refrigerant	Narrow tube	mm(in.)	9,52 (3/8")
tube diameter	Wide tube	mm(in.)	15,88(5/8")

Dimensions & Weight			
Unit dimensions	Height	mm	680
	Width	mm	900
	Depth	mm	340
Package dimensions	Height	mm	730
	Width	mm	985
	Depth	mm	406
Weight	Net	kg	74
	Shipping	kg	-
Shipping volume		m^3	0,29

DATA SUBJECT TO CHANGE WITHOUT NOTICE

Remarks:

Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.
Outdoor air temperature 35°C D.B. / 24°C W.B.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

* For other INDOOR UNITS' MODELS, please refer to catalogue

GRF225R5

Power source	220 - 240V ~ 50Hz

Voltage rating	230V

Performance *	**MCAF225R5**		Cooling	Heating
Capacity		kW	6,81	7,37
		BTU/h	23220	25130
Air circulation (High)		m^3/h	990	
Moisture removal (High)		Liters/h	2,66	-

Electrical Rating			Cooling	Heating
Available voltage range		V	198 ~ 264	
Running amperes		A	9,4	10,2
Power input		W	2260	2400
C.O.P.		W/W	3,01	3,07
Compressor locked rotor amperes		A	65	

Features			
Fan speed			1(Hi)
Compressor			Rotary (Hermetic)
Refrigerant / Amount charged at shipment		g	R410A / 2040
Refrigerant control			Capillary tube
Operation Sound	Hi	dB-A	67
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment		m	20
Refrigerant	Narrow tube	mm(in.)	9,52 (3/8")
tube diameter	Wide tube	mm(in.)	15,88(5/8")

Dimensions & Weight			
Unit dimensions	Height	mm	680
	Width	mm	900
	Depth	mm	340
Package dimensions	Height	mm	730
	Width	mm	985
	Depth	mm	406
Weight	Net	kg	74
	Shipping	kg	-
Shipping volume		m^3	0,29

DATA SUBJECT TO CHANGE WITHOUT NOTICE

Remarks:

Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.
Outdoor air temperature 35°C D.B. / 24°C W.B.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

* For other INDOOR UNITS' MODELS, please refer to catalogue

GRF225C7/L7

Power source	380 - 415V 3N ~ 50Hz

Voltage rating	415V

Performance *	**MCAF225R5**		Cooling	Heating
Capacity		kW	6,81	7,37
		BTU/h	23220	25130
Air circulation (High)		m³/h	990	
Moisture removal (High)		Liters/h	2,66	-

Electrical Rating		Cooling	Heating
Available voltage range	V	342 ~ 418	
Running amperes	A	4,10	4,4
Power input	W	2260	2400
C.O.P.	W/W	3,01	3,07
Compressor locked rotor amperes	A	55	

Features			
Fan speed			1(Hi)
Compressor			Rotary (Hermetic)
Refrigerant / Amount charged at shipment		g	R410A / 2040
Refrigerant control			Capillary tube
Operation Sound	Hi	dB-A	67
Refrigerant tubing connections			Flare type
Max. allowable tubing length at shipment		m	20
Refrigerant	Narrow tube	mm(in.)	9,52 (3/8")
tube diameter	Wide tube	mm(in.)	15,88(5/8")

Dimensions & Weight			
Unit dimensions	Height	mm	680
	Width	mm	900
	Depth	mm	340
Package dimensions	Height	mm	730
	Width	mm	985
	Depth	mm	406
Weight	Net	kg	74
	Shipping	kg	-
Shipping volume		m^3	0,29

DATA SUBJECT TO CHANGE WITHOUT NOTICE

Remarks:

Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.
Outdoor air temperature 35°C D.B. / 24°C W.B.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

* For other INDOOR UNITS' MODELS, please refer to catalogue

2-2 Major Component Specifications

Outdoor Unit: **GRF225C5/L5**
GRF225R5

Compressor					
Type					Rotary (Hermetic)
Compressor model					NN27VBMT
Nominal capacity				W	6720
Compressor oil…Amount				cc.	MEL56…..1200
Coil resistance (Ambient temp. 25°C)				Ω	main: 0,88 aux: 1,64
Safety devices	Type				Internal protector
	Operating Temp.	Open		°C	-
		Close		°C	-
	Operating amp.(Ambient temp.25°C)				35
Run capacitor				µF	55
				VAC	-

Fan & Fan Motor					
Type					Propeller
Q'ty ……. Dia.					1…. Ø 493
Fan motor model…Q'ty					ELE-86G…1
No. Of poles…rpm (230 V, High)					4…850
Nominal output				W	70
Coil resistance (Ambient temp. 20 °C)				Ω	-
				Ω	-
Safety devices	Type				thermistor
	Operating temp.	Open		°C	135
		Close		°C	-
Run capacitor				µF	6
				VAC	-

Heat Exch. Coil		
Coil		Aluminium plate fin / Copper tube
Rows		2
Fin pitch	mm	1,6
Face area	m^2	0,614

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE

Outdoor Unit: **GRF225C7/L7**
GRF225R7

Compressor				
Type				Rotary (Hermetic)
Compressor model				NN27YDAMT
Nominal output			W	6890
Compressor oil…Amount			cc.	MEL 56…1300
Coil resistance (Ambient temp. 25°C)			Ω	3,59
Safety devices	Type			Internal protector
	Operating Temp.	Open	°C	-
		Close	°C	-
	Operating amp.(Ambient temp.25°C)			-

Fan & Fan Motor				
Type				Propeller
Q'ty ……. Dia.				1…. Ø 493
Fan motor model…Q'ty				ELE-86G…1
No. Of poles…rpm (230 V, High)				4…850
Nominal output			W	70
Coil resistance (Ambient temp. 20 °C)			Ω	-
			Ω	-
Safety devices	Type			thermistor
	Operating temp.	Open	°C	135
		Close	°C	-
Run capacitor			μF	6
			VAC	-

Heat Exch. Coil		
Coil		Aluminium plate fin / Copper tube
Rows		2
Fin pitch	mm	1,6
Face area	m^2	0,614

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE

2-3 Other Component Specifications

Outdoor Unit: **GRF225R5**
GRF225R7

4-way Valve (20S)		**SHF-9H-35U(Valve)**
Coil rating		AC 220/240V,50Hz,7W
Coil resistance	Ω (at 20°C)	1500

Outdoor sensor		
Resistance	Ω (at 25°C)	10K±2%

GRF225C7
GRF225R7

Negative Phase Relay	
Type	ALPHA-8/1
Rating	AC 380 V, 3-PHASE 50 Hz
Contact Rating	AC 240 V , 2 A
Operation	Positive phase: ON Negative phase: OFF

Power control board		
Type		TYPHOON 3C
Coil Rating		AC 230V,50/60Hz
Contact rating	A	-
Coil resistance	Ω	-

GRF225C5
GRF225L5
GRF225R5

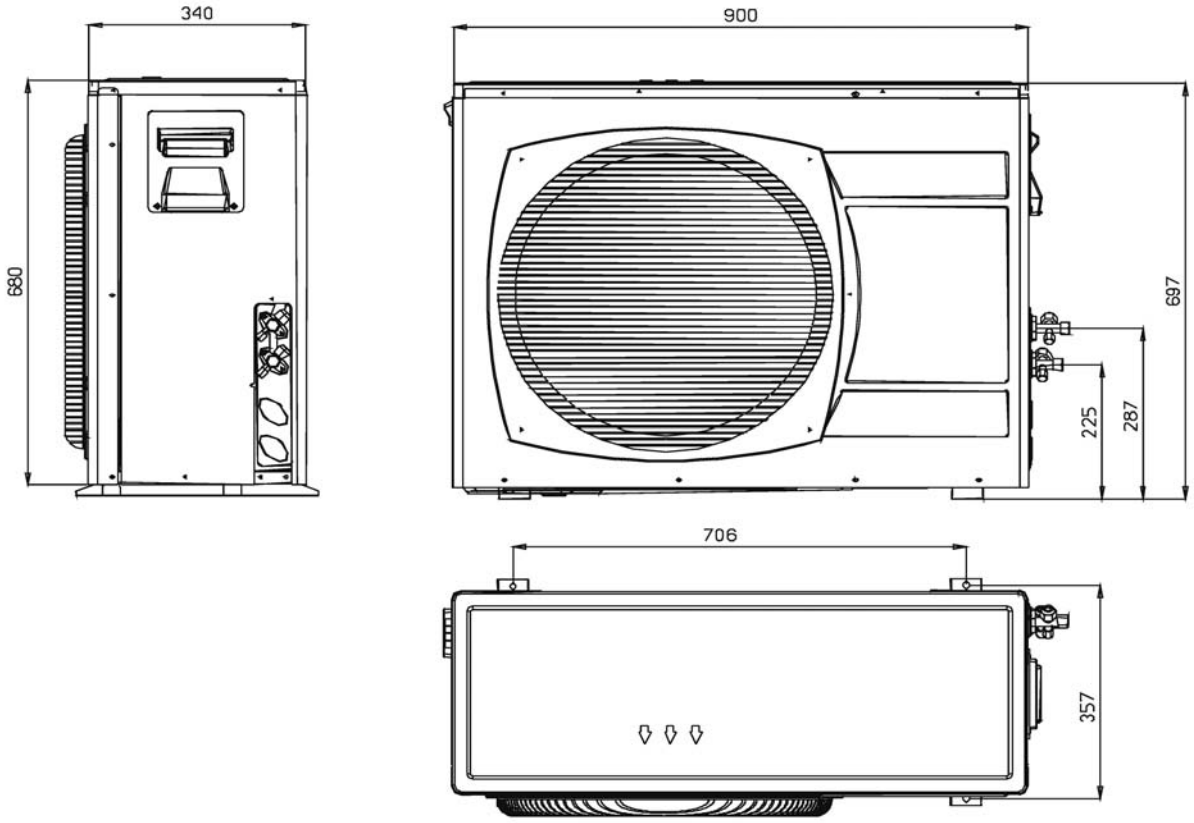
Power control board		
Type		TYPHOON 5B
Coil Rating		AC 230V,50/60Hz
Contact rating	A	-
Coil resistance	Ω	-

GRF225L5
GRF225L7

Low ambient kit		**RGE-Z1L6-5**
Rating		AC 230V 50 Hz
Setpoint	MPa	3,2

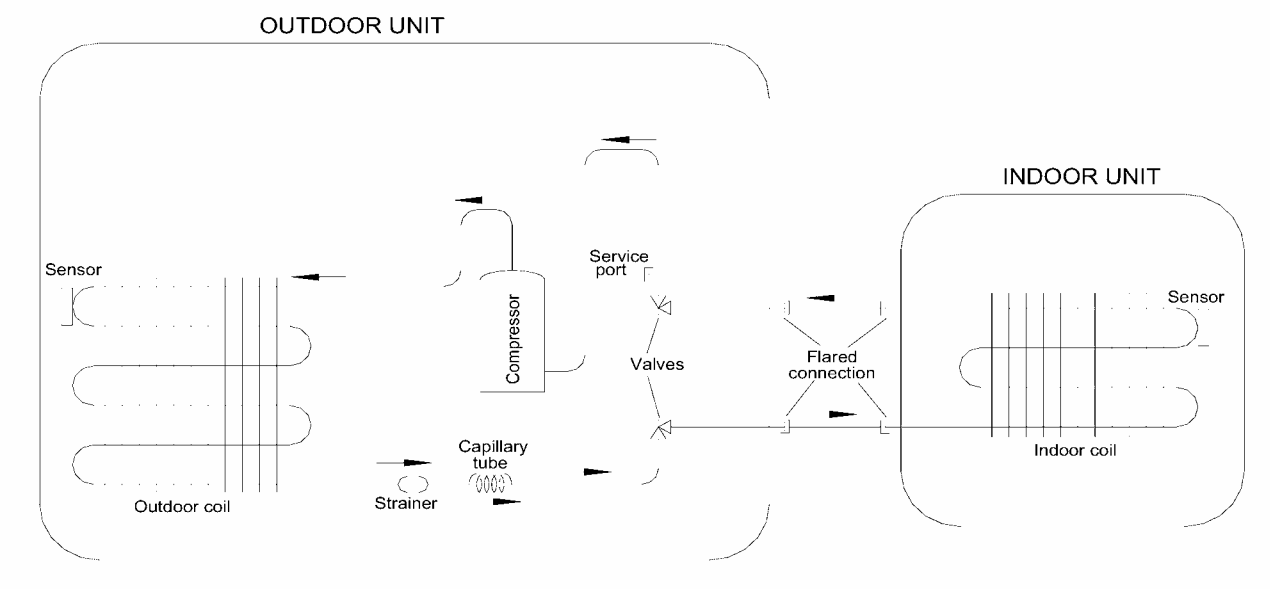
3. DIMENSIONAL DATA

Outdoor Unit: **GRF225C5/L5**
GRF225R5
GRF225C7/L7

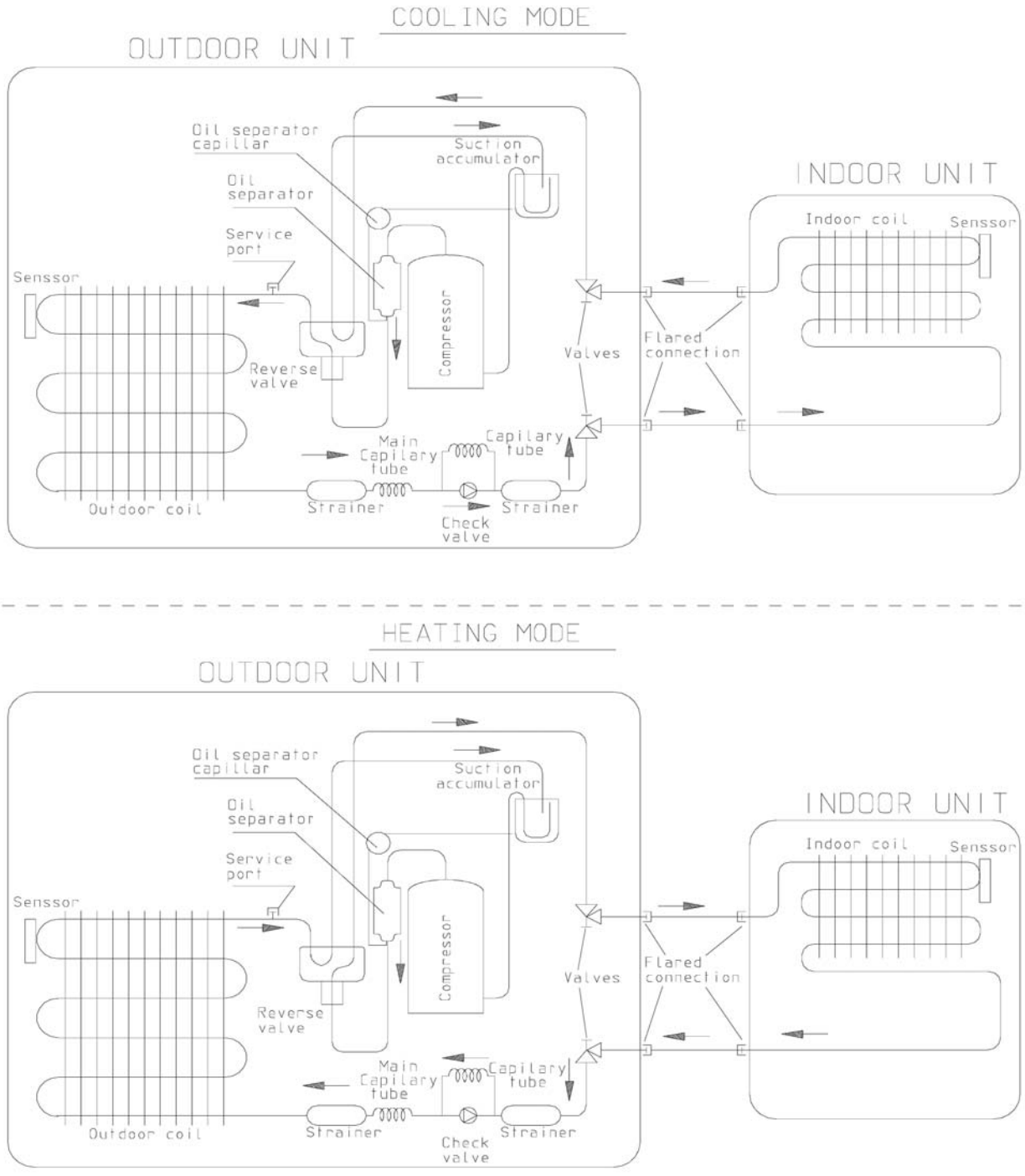


4. REFRIGERANT FLOW DIAGRAM

Indoor Unit: **Outdoor Unit:** **GRF225C5/L5**
GRF225C7/L7



Indoor Unit: **Outdoor Unit:** **GRF225R5**
GRF225R7

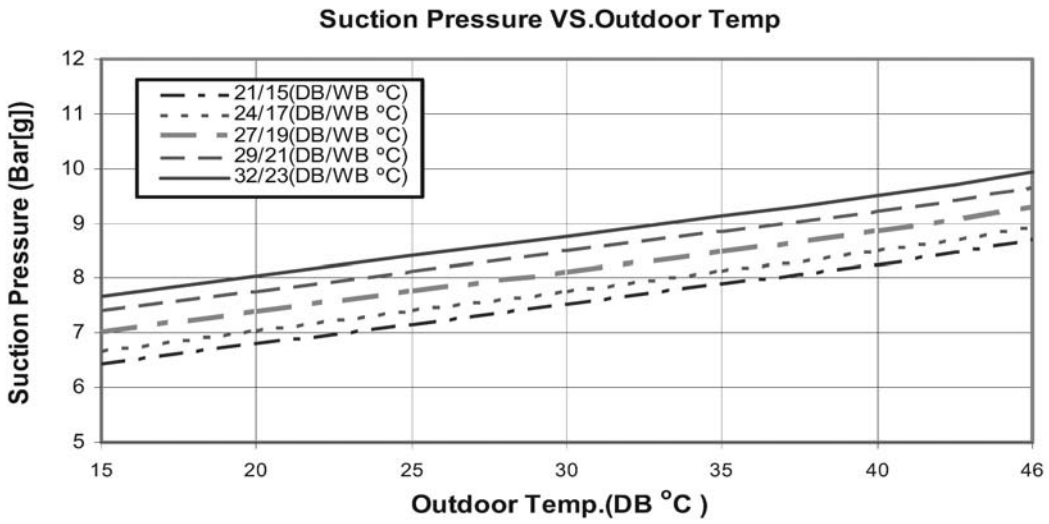


5. PERFORMANCE DATA

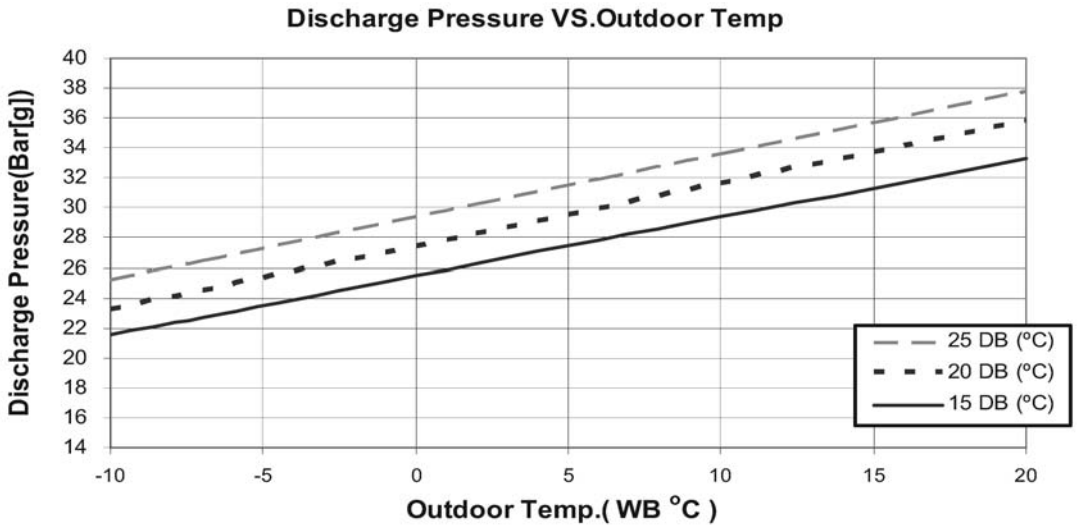
5-1 Performance charts

GRF225C5/L5
GRF225R5
GRF225C7/L7
GRF225R7

- Cooling Characteristics



- Heating Characteristics



5-2 Cooling Capacity

OUTDOOR UNIT: **GRF225C5/L5**
GRF225R5
GRF225C7/L7
GRF225R7
INDOOR UNIT: **MCAF225R5**

220 - 240V ~ 50Hz

RATING CAPACITY	6,81 kW	moisture removal	2,66 l/h
POWER INPUT	2,26 kW	max power input	2,47 kW
AIR FLOW RATE	990 m³/h		

ENTERING AIR DB OU COIL (°C)	DATA	ENTERING AIR WB/DB ID COIL (°C)				
		15/21	17/24	19/27	21/29	23/32
15	TC	6.95	7.35	7.70	8.04	8.31
	SC	4.55	4.83	5.09	4.97	5.06
	PI	1.60	1.61	1.61	1.62	1.62
20	TC	6.88	7.29	7.63	7.97	8.24
	SC	4.90	5.21	5.51	5.35	5.46
	PI	1.73	1.74	1.75	1.76	1.77
25	TC	6.61	7.08	7.49	7.83	8.10
	SC	4.43	4.74	5.01	4.92	5.05
	PI	1.87	1.89	1.91	1.92	1.92
30	TC	6.20	6.67	7.22	7.49	7.76
	SC	4.21	4.54	4.91	4.81	5.00
	PI	2.02	2.05	2.08	2.09	2.10
35	TC	5.72	6.20	**6.81**	7.15	7.42
	SC	3.96	4.31	**4.71**	4.65	4.85
	PI	2.19	2.22	**2.26**	2.28	2.29
40	TC	5.18	5.65	6.27	6.61	6.88
	SC	3.68	4.05	4.45	4.39	4.60
	PI	2.36	2.40	2.44	2.46	2.48
46	TC	4.49	4.97	5.58	5.92	6.20
	SC	3.35	3.71	4.18	4.10	4.29
	PI	2.59	2.63	2.68	2.71	2.74

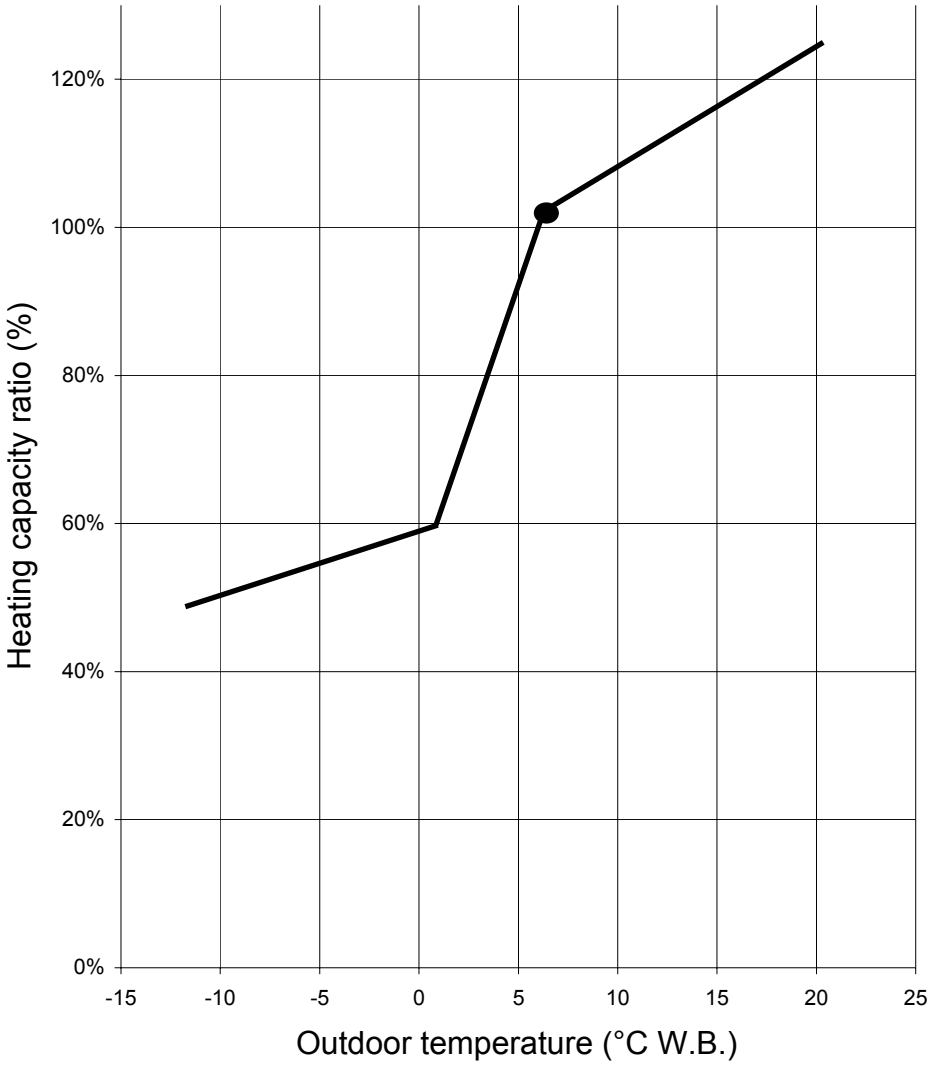
LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

RATING CONDITIONS
Cooling: Indoor air temperature : MCAF225R5
Outdoor air temperature 35°C D.B. / 24°C W.B.

NOTE: Data related to matching with MCAF225R5

5-3 Heating Capacity



NOTE

● 1- Black dot in the chart indicates the following rating condition.
Indoor: 20°C D.B.
Outdoor: 7°C D.B. / 6°C W.B.

2- The above chart includes the weighted deicing influence

6. ELECTRICAL DATA

6-1 Electrical characteristics

OUTDOOR UNIT: **GRF225C5/L5**
GRF225R5

COOLING

			Complete Unit
performance at			230V 1-Phase 50 Hz
Rating conditions	Running Amps.	A	9,40
	Power input	Kw	2,26

Rating Conditions: Indoor Air Temperature 27°C D.B. / 19°C W.B.
Outdoor Air Temperature 35°C D.B.

HEATING

			Complete Unit
performance at			230V 1-Phase 50 Hz
Rating conditions	Running Amps.	A	10,20
	Power input	Kw	2,4

Rating Conditions: Indoor Air Temperature 20°C D.B.
Outdoor Air Temperature 7°C D.B. / 6°C W.B.

Full load conditions	Running Amps.	A	11,7
	Power input	Kw	2,47

NOTE: Data related to matching with MCAF225R5
For other indoor unit models there could be the same differences.

OUTDOOR UNIT: **GRF225C7/L7**
GRF225R7

COOLING

			Complete Unit
performance at			380V 3-Phase 50 Hz
Rating conditions	Running Amps.	A	4,10
	Power input	Kw	2,26

Rating Conditions: Indoor Air Temperature 27°C D.B. / 19°C W.B.
Outdoor Air Temperature 35°C D.B.

HEATING

			Complete Unit
performance at			380V 3-Phase 50 Hz
Rating conditions	Running Amps.	A	4,30
	Power input	Kw	2,4

Rating Conditions: Indoor Air Temperature 20°C D.B.
Outdoor Air Temperature 7°C D.B. / 6°C W.B.

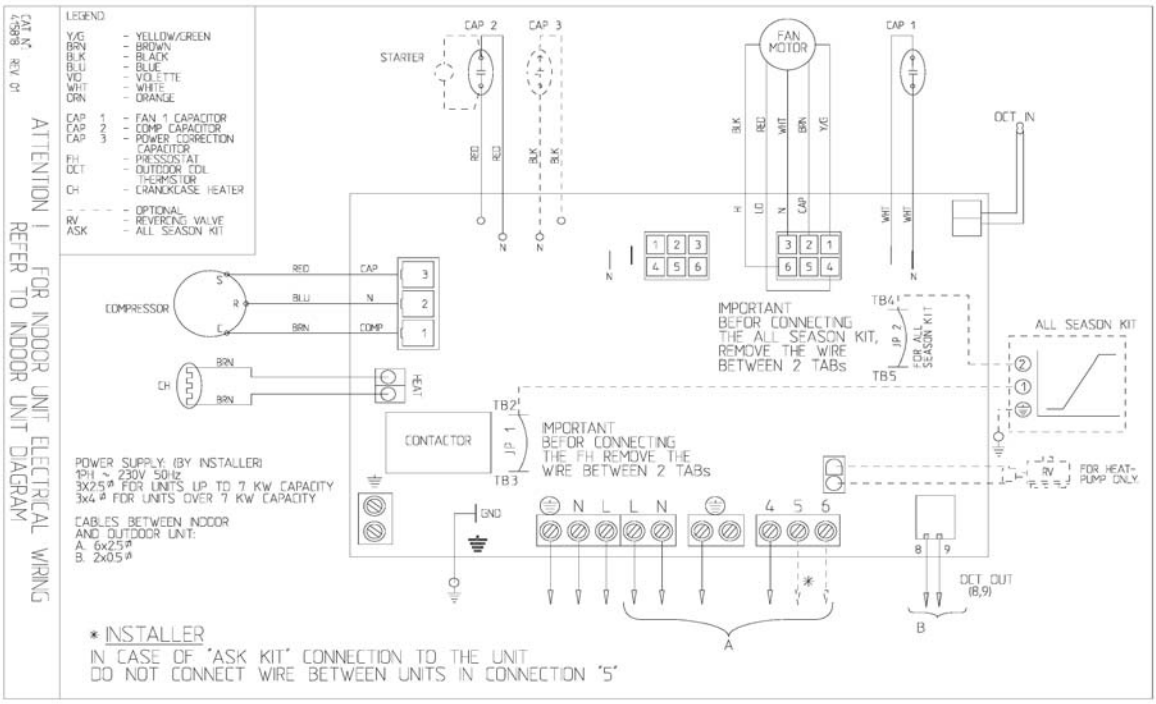
Full load conditions	Running Amps.	A	6,14
	Power input	Kw	2,90

NOTE: Data related to matching with MCAF225R5
For other indoor unit models there could be the same differences.

6-2 Electric Wiring Diagram

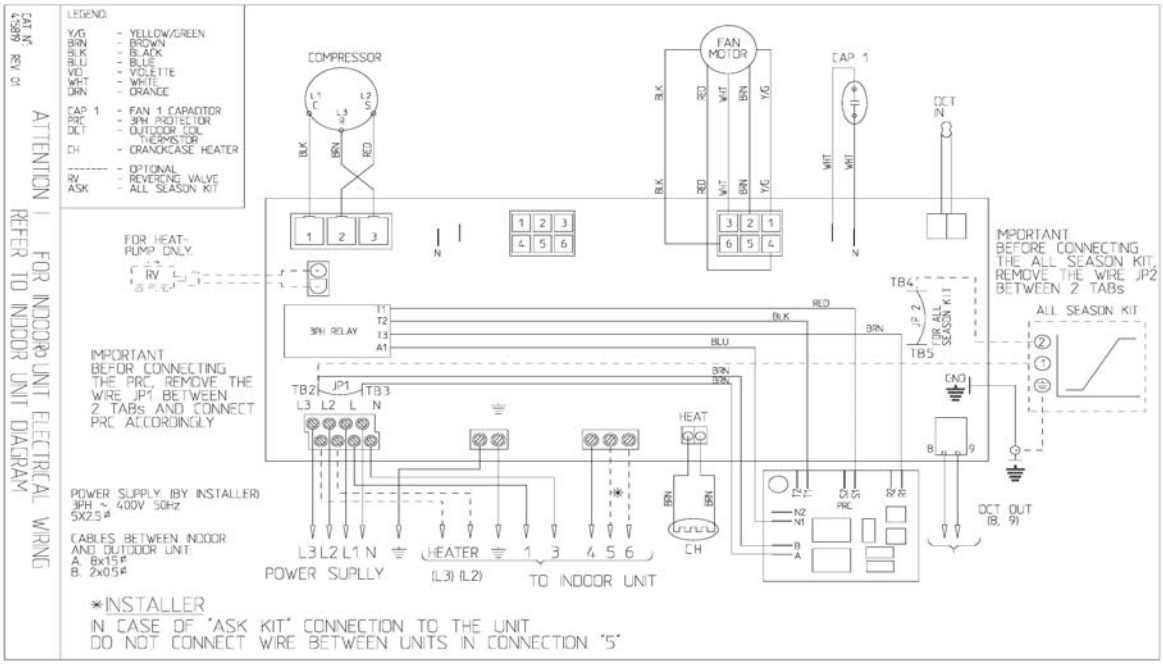
OUTDOOR UNIT:

GRF225C5/L5
GRF225R5


ATTENTION ! FOR INDOOR UNIT ELECTRICAL WIRING
REFER TO INDOOR UNIT DIAGRAM
LEGEND
Y/G - YELLOW/GREEN
BRN - BROWN
BLK - BLACK
BLU - BLUE
VIO - VIOLETTE
WHT - WHITE
ORN - ORANGE
CAP 1 - FAN 1 CAPACITOR
CAP 2 - COMP CAPACITOR
CAP 3 - POWER CORRECTION CAPACITOR
PH - PRESSOSTAT
OCT - OUTDOOR COIL THERMISTOR
CH - CRANKCASE HEATER
OPTIONAL
RV - REVERSING VALVE
ASK - ALL SEASON KIT
STARTER
CAP 2
CAP 3
FAN MOTOR
CAP 1
OCT IN
COMPRESSOR
CH
CONTACTOR
IMPORTANT BEFOR CONNECTING THE ALL SEASON KIT, REMOVE THE WIRE BETWEEN 2 TABs
IMPORTANT BEFOR CONNECTING THE PH REMOVE THE WIRE BETWEEN 2 TABs
ALL SEASON KIT
FOR HEAT-PUMP ONLY
POWER SUPPLY (BY INSTALLER)
1PH ~ 230V 50Hz
3X2.5 FOR UNITS UP TO 7 KW CAPACITY
3x4 FOR UNITS OVER 7 KW CAPACITY
CABLES BETWEEN INDOOR AND OUTDOOR UNIT:
A. 6x2.5
B. 2x0.5
OCT OUT (8,9)
* INSTALLER
IN CASE OF "ASK KIT" CONNECTION TO THE UNIT
DO NOT CONNECT WIRE BETWEEN UNITS IN CONNECTION "5"

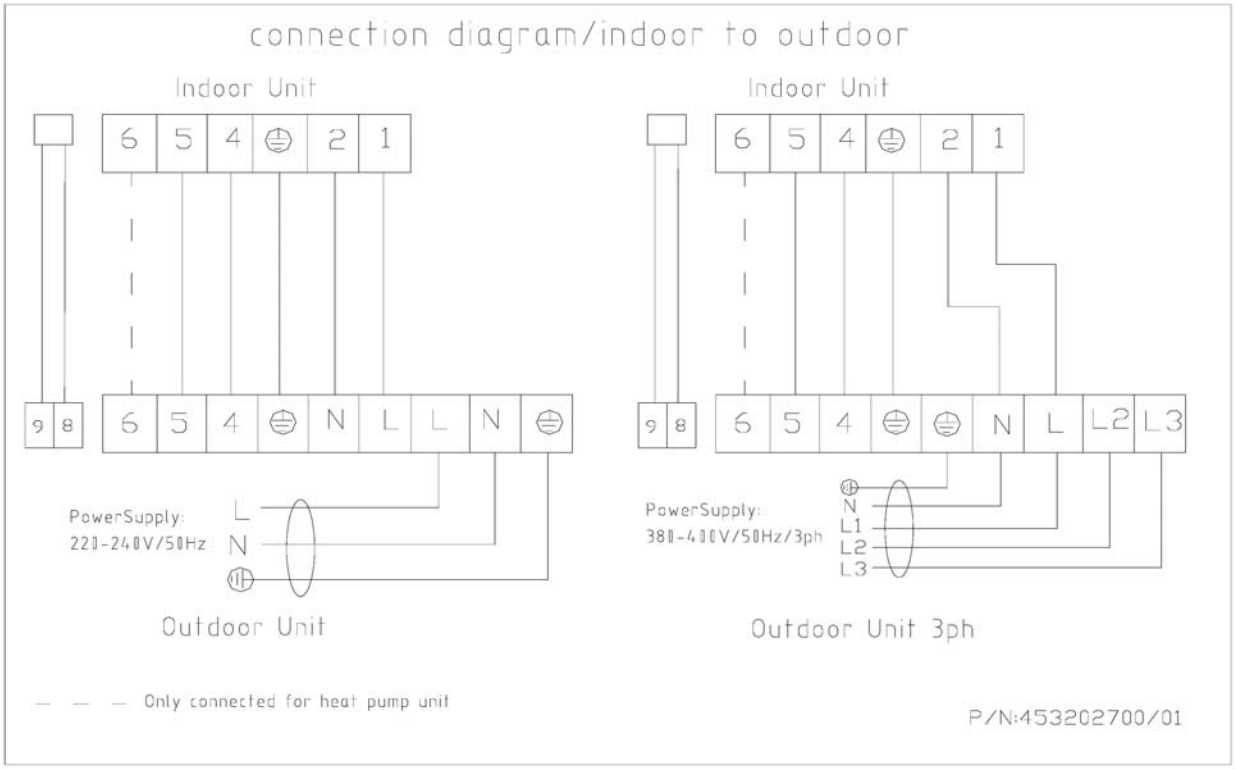
OUTDOOR UNIT:

GRF225C7/L7
GRF225R7


ATTENTION ! FOR INDOOR UNIT ELECTRICAL WIRING
REFER TO INDOOR UNIT DIAGRAM
LEGEND
Y/G - YELLOW/GREEN
BRN - BROWN
BLK - BLACK
BLU - BLUE
VIO - VIOLETTE
WHT - WHITE
ORN - ORANGE
CAP 1 - FAN 1 CAPACITOR
PRC - 3PH PROTECTOR
OCT - OUTDOOR COIL THERMISTOR
CH - CRANKCASE HEATER
OPTIONAL
RV - REVERSING VALVE
ASK - ALL SEASON KIT
COMPRESSOR
FAN MOTOR
CAP 1
OCT
FOR HEAT-PUMP ONLY
3PH RELAY
IMPORTANT BEFOR CONNECTING THE PRC, REMOVE THE WIRE JP1 BETWEEN 2 TABs AND CONNECT PRC ACCORDINGLY
IMPORTANT BEFORE CONNECTING THE ALL SEASON KIT, REMOVE THE WIRE JP2 BETWEEN 2 TABs
ALL SEASON KIT
HEAT
CH
POWER SUPPLY (BY INSTALLER)
3PH ~ 400V 50Hz
5X2.5
CABLES BETWEEN INDOOR AND OUTDOOR UNIT:
A. 8x1.5
B. 2x0.5
L3 L2 L1 N (HEATER) 1 3 4 5 6
POWER SUPPLY (L3) (L2) TO INDOOR UNIT
OCT OUT (8, 9)
*INSTALLER
IN CASE OF "ASK KIT" CONNECTION TO THE UNIT
DO NOT CONNECT WIRE BETWEEN UNITS IN CONNECTION "5"

6-3 System Wiring Diagram

GRF225C5/L5
GRF225R5
GRF225C7/L7
GRF225R7



Technibel Climatisation

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